DOCUMENT RESUME

ED 287 241 EC 200 546

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TITLE The Impact of Teacher and Student Variables in Predicting Referral to Special Education.
PUB DATE Apr 87
NOTE 21p.; Paper presented at the Annual Meeting of the American Educational Research Association (Washington, DC, April 20-24, 1987).
PUB TYPE Reports - Research/Technical (143) -- Speeches/Conference Papers (150)

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS Academic Achievement; *Decision Making; Elementary Education; Interpersonal Competence; *Learning Disabilities; Motivation; *Referral; Student Characteristics; *Student Evaluation; *Student Placement; *Teacher Attitudes

ABSTRACT

The study investigated factors responsible for referral and placement of elementary grade learning disabled students. Nine teachers with a total of 212 students rated students for such factors as teachability, motivation, social skills, and academic potential. Other measures included the Home Language Survey and the Comprehensive Test of Basic Skills. Discriminant analyses were performed to determine: (1) factors which differentiate referred and nonreferred students; and (2) an equation to distinguish between referred students placed in special programs and those not placed. Students who had not been referred were classified to determine whether they would have been placed by the formula if referred. Results included the following: the best predictor of referral was the teacher's evaluation of the student's ability to perform in a regular class the following year; the best predictor of referred students actually placed in special education was the teacher's rating of the child's level of motivation during class activities. Results supported previous findings that the teacher's decision to refer is the major factor in special education placement and that a decision making strategy known as anchoring (in which most credence is given to initial information) appeared to be operating. (DB)

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ED287241

The Impact of Teacher and Student Variables in Predicting Referral to Special Education

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Paper presented at the annual meeting of the American Educational Research Association, April, 1987, Washington, D.C.

EC 200546

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Over the past 7 years, there has been an 11.9% increase in the number of children classified as learning disabled (LD) in the nation's schools (Foster, 1984). The method of classifying these children has come under scrutiny as the category continues to expand. The idiosyncrasies of the referral and placement process of learning disabled students have been the target of much discussion. Theoretically, a student should be referred for LD services when his or her achievement is below grade level due to a learning deficit and the teacher has attempted remedial measures which have proven ineffective. If deemed appropriate, assessment is initiated. The results of the assessment are then reviewed by a multidisciplinary team to determine if a student is learning disabled. However, it is difficult to pinpoint what constitutes a learning disability due to the diversity of the rules applied for classification and the fact that they are not adhered to.

LD children are not a homogeneous group of individuals. They are students with average intelligence who cannot learn in a regular classroom environment. The reasons for their inability to learn are diverse. In an analysis of 47 studies comparing normal to learning disabled children, Weener (1981) found that the range of scores of the LD group on cognitive processing tasks was as great as the regular classroom group. The variability of performance of the two groups was similar.

The problems in defining the learning disabled can be verified by reviewing studies of their characteristics and overlap with the normal population. The current most common mode of classifying LD children is the discrepancy model. The

discrepancy model posits that a student qualifies as learning disabled if normal intelligence exists, there is a significant discrepancy between ability and achievement, and the discrepancy is due to a psychological process disorder. Smith, Coleman, Dokecki and Davis (1977) administered the Wechsler Intelligence Scale for Children- Revised (WISC-R) to over 200 school labeled LD children. Thirty-seven percent of these children were found to be below normal intelligence. In a study of 1000 cases in Colorado (Shepard and Smith, 1983), only 20.5% of the learning disabled met the second standard, a significant discrepancy between ability and achievement. Norman and Zigmond (1980) reviewed the files of 1966 LD children served in Child Service Demonstration Centers (CSDC) in 22 states and found significant variability in characteristics such as age, achievement and discrepancy scores. They concluded that a "heterogeneous, ill-defined population of students is being labeled as learning disabled" (page 16).

One of the problems with identification is the formula used to compute the discrepancy (Berk, 1984; Forness, Sinclair, and Guthrie, 1983; Kelemen and Semmel, 1985; Warner, 1981; Ysseldyke, Algozzine, and Epps, 1983). Studies to compare children categorized under diverse models have demonstrated considerable overlap between the learning disabled, underachievers and normal school population. Ysseldyke et al. (1983) evaluated normal third, fifth, and twelfth grade students and demonstrated that 85% of them could be diagnosed as learning disabled. Continuing their investigation on groups of low achievers and

learning disabled students, 88% of the former were identified as LD, while 4% of the LD sample would not have been classified as LD.

Forness et al. (1983) evaluated children who were potentially learning disabled using eight discrepancy formulas. Of the 92 subjects tested, between 10.9% and 37% were identified as LD depending on the equation stipulated. Forty-seven percent of the sample were not identified as LD by any formula and 7 children were identified by all of the formulas.

Warner (1981) compared 620 adolescents on 5 discrepancy models. The most accurate model in predicting learning disabilities was the Mylkebust criterion which correctly (according to a school-identified sample) classified 99% of the sample. However, it categorized 91% of the low achievers as being LD. The proposed federal formula categorized 76% of the LD students as LD and 40% of the low achievers as LD.

Comparing who is identified according to different formulas is a questionable method. This method assumes that LD is a disease that can be isolated. Categorization is an outgrowth of the medical model that posits the existence of LD as an entity within a child. However, we can identify no independent criteria on which the formulas can be validated.

The reliability of LD classification differs not only from state to state (e.g. of those diagnosed as requiring special education services, 63% are categorized as LD in Rhode Island, 55% in California, 27% in Indiana and 26% in Alabama (Keogh, 1986)) but from school to school as well (see Gerber and Semmel, 1984). The most important feature in the placement of learning

disabled youngsters seems to be who gets referred. Once a child is referred, the chances are extremely high that he or she will be deemed eligible for special services. In a survey of 94 Special Education Directors from 37 states, Algozzine, Christenson and Ysseldyke (1982) found that 5% of elementary school students are referred for special education services each year. Approximately 92% of these students are evaluated and of those 73% are identified as requiring placement.

Referral and placement procedures of learning disabled youngsters are replete with disparities. The final step in the categorization process has been studied, but few definitive conclusions have been drawn. It is hypothesized that the process of classification of the learning disabled requires investigation at an earlier stage, that of the referral made by the teacher.

The purpose of the present study was to investigate factors responsible for referral and subsequent placement of learning disabled students. Discriminant analyses were performed to determine (1) factors which differentiate referred and nonreferred students; and (2) an equation to distinguish between referred students who were placed and those who were not placed. Lastly, students who had not been referred were classified. The aim was to quantify the number of students who would have been placed by the formulas specified if they had been referred. This is an opportunity to evaluate the students who have not been deemed eligible for services by the teacher.

METHODS

Subjects

Participants were 212 elementary school children from a first through eighth grade school in southern California and their nine teachers.

Instruments

A questionnaire was administered to the teachers on each of the children. Constructed by Borko and Cadwell (1982), it was designed to measure "teachability" of students. Ratings of all 6 questions were on a 6 point rating scale with anchor points appropriate to the specific decision. Need for teacher supervision, motivation, social interaction skills, academic potential, ease of teaching, and readiness for a regular class for next year were the areas covered. Results of the Home Language Survey, which is routinely completed for each child in California schools, were employed to determine if the child was in migrant education, the language spoken at home, English proficiency, and if the child was receiving ESL services. Achievement scores on the Comprehensive Test of Basic Skills (CTBS) were compiled for Vocabulary, Reading, Language, and Arithmetic.

Procedures

Two stepwise discriminant analyses were performed with jackknifed cross-validation procedures. A discriminant analysis calculates equations with several independent variables to differentiate between groups. The dependent variable is dichotomous, i.e. group membership. The linear discriminant

function converts the two multivariate populations into univariate populations so that the means of each population are separated as much as possible relative to the population variance (Johnson and Wichern, 1982). Both the strength and nature of the determinants of the differences can be studied; the former by noting the percent of correct identification under the jackknifed procedure and the latter by scrutinizing the magnitude of the discriminant coefficients in the final prediction equation.

The discriminant analysis procedure uses the most important variable first and evaluates if it is significant, using an F-test, in determining which children fall into a particular group. The jackknifed operation classifies into groups according to the classification functions computed from all the data except the case being classified. The case being classified is not included in the computations of the equation which is used to differentiate the groups. All of the cases are then classified into groups according to the equation developed. A comparison is made between the children who belong in the groups and those classified into the groups according to the equation.

Misclassification occurs when a child is classified into a group other than the one to which he/she actually belongs. The estimates of the probabilities of misclassification are computed by summing the number of cases that were misclassified from each group and dividing by the number in each group (see Lachenbruch and Mickey, 1968).

Consideration of all variables was forced. The first analysis compared students not referred to those referred. The second analysis attempted to distinguish those categorized as LD

from the children who were referred but not placed. The children who were not referred were then evaluated to determine which of them would have been classified as eligible for special education according to the criteria of the second discriminant analysis.

RESULTS

The first discriminant analysis, differentiating the referred from the non-referred students, yielded 81.6% correct under the jackknifed classification. In other words, the equation could correctly predict which student would be referred with an accuracy of 81.6%. Table 1 shows the results.

Insert Table 1 about here

The variable with the highest F-value, i.e. the best predictor given the variables considered, was the teacher's evaluation of the student's ability to perform in a regular class the following year. Following in significance were English as a second language, the CTBS language score and the CTBS vocabulary score.

In a comparison of the referred students, the second discriminant analysis attempted to distinguish those who had been placed in special education from those who had not been placed. The jackknifed classification procedure was 51.7% accurate in this case.

Insert Table 2 about here

The jackknifed classification of those students who were referred and not placed versus those students who were referred and placed is presented in Table 2. It is possible that the small number of cases contributes to the low percent correct. Under the standard classification process, which capitalizes on the unique information in the available cases, the percent correct is higher (see Table 3).

Insert Table 3 about here

In attempting to distinguish those who had been placed in special education from those who had not been placed, the most significant discriminating variable was the teacher's rating of the child's level of motivation during class activities. The grade level was next, followed by the student's readiness for the regular class (the highest predictor in the first analysis), English as a second language and the CTBS reading score. It is interesting to note that once a student is referred, achievement ranks fifth as a predictor of placement.

Submitting the variables for the non-referred students to the discriminant functions for placement yielded 144 placed and 40 who would not have been placed. This is a total of 78% of non-referred children who would have been considered eligible for services had they been referred.

DISCUSSION

Results of the current study are consistent with the findings of Ysseldyke, Algozzine and Epps (1983) that 85% of normal children could be classified as LD and Algozzine, Christenson and Ysseldyke (1981) that of those evaluated, 73% are deemed eligible for special services. The teacher's decision to refer seems to be the major factor in the relegation of special services.

Teacher decision making has been studied in relation to instructional decisions (Semmel and Englert, 1978; Shavelson and Stern, 1981) and student aptitudes (Borko and Cadwell, 1982). There has been speculation as to its impact on the referral (Gerber and Semmel, 1984) and placement process (Kelemen and Semmel, 1985; Thurlow and Ysseldyke, 1979; Ysseldyke and Thurlow, 1984).

Borko and Cadwell (1982) conducted a simulated study of the decision strategies of 46 teachers regarding student aptitudes and classroom organization and management. Multiple regression analyses were performed using Ordinary Least Squares estimators. Teachers decision rules were found to be so varied that grouping was not possible. The authors recommended caution in aggregating results across teachers in decision rsearch.

One possibility is that teacher tolerance is a trait that, once determined, will aggregate across teachers to predict referral. Gerber and Semmel (1984) have proposed that the first "test" in the referral process is the teacher. Algozzine, Christenson and Ysseldyke (1982) suggest that one of the reasons for the increase in the numbers of the learning disabled is the

"lack of tolerance by teachers for difference" (page 19). In both discriminant analyses, the most potent variable was a teacher rating of the child's class performance. If the process determining placement is to be studied, it seems that the factors causing referral are a more logical starting point than test data or the opinions of professionals at multidisciplinary team meetings. For example, in a study of 356 school psychologists, Johnson (1980) found that their classification criteria were not accepted by members of the team.

Kelemen and Semmel (1985) have proposed that subjective assessment of probabilities is utilized to establish who will be provided special education services. Subjective assessment of probabilities is one aspect of the decision making model. Placement team members determine the probability that a child is LD by their own experiences with children having similar characteristics i.e. use subjective assessments of probabilities. This is in contrast to the frequency interpretation of probabilities that would estimate base rates of LD traits for the population.

One of the biases of specialists such as psychologists or speech therapists who use subjective assessments is that they only see students who are referred. The representativeness of their sample is biased, so their assessment of the number of students with handicaps is high. A teacher or principal who compares the base rate to a normal population, has a more representative sample. Subjective assessment of probabilities is disposed to other errors as well (see Tversky and Kahneman, 1982). Beginning with referral, decisions based on subjective

assessments are made which ultimately result in categorization. Research supports the contention that the data do not establish classification.

Once a child is referred, the chances are extremely high that he or she will be deemed eligible for special services. In a survey of 94 Special Education Directors from 37 states, Algozzine et al. (1982) found that 5% of elementary school students are referred for special education services each year. Approximately 92% of these students are evaluated and of those 73% are identified as requiring placement. The quantity of the information presented does not correlate with the nature of the decision nor is it apparent that specific assessment results are utilized for eligibility decisions (Ysseldyke and Algozzine, 1979).

The process evolving seems to be a decision making strategy known as anchoring. According the most credence to initial information received, subsequent data is not used to make sufficient adjustments to the initial information. Anchoring occurs when decisions are heavily biased toward initial values (Tversky and Kahneman, 1982). In the placement process, the first knowledge the multidisciplinary team receives comes from the teacher who feels that the child requires special education placement. Considering the fact that 73% of the students assessed become categorized as LD, one hypothesis to consider is that it is who gets referred that is the potent determinant of who gets placed. Though other data is presented at the multidisciplinary team meeting, the initial anchor is never

adjusted sufficiently. The study of teacher characteristics that determine the strength of the anchor and the amount of adjustment that is made due to testing results and professional judgments would be a good area for future research.

Another possibility, of course, is that the teacher is a bona fide "anchor" since he or she observes a range and depth of student behavior that may be greater than that of standardized tests. It is assumed that teacher identification requires validation by traditional psychometric instruments (Gerber and Semmel, 1984). This ignores the fact that if a student is referred by the teacher, it may signal the fact that outside intervention is required for the student to profit from instruction in that class (Gerber, in press).

Another potential area of research is the differences between the formulas for placement that would result if discriminant analyses were performed from school to school. These could be compared to determine whether placement is consistent once referral has taken place. Referral may differ from teacher to teacher according to tolerance, while placement is designated by a consistent formula. It is also conceivable that reasons for referral are uniform once teacher tolerance has been ascertained, but the factors determining placement vary from school to school. If the latter is the case it would be interesting to note the disparities in equations predicting placement.

If the former is true, formulas predicting placement could be applied to all children in a school. It may be that there are children who are in need of special education services who are

not receiving them because they have not been referred. Though they do not fail the teacher's test of being intolerable in the classroom, they may be eligible to be classified as learning disabled.

In opposition to this, a third possibility is that the function of special education is to serve those students whose teachers can no longer tolerate them in the classroom. When the match between student behavior and teacher expectations no longer exists, the student is referred for an alternate placement.

Whatever the case, it seems that teachers' perceptions are more predictive of special education placement than student scores. It is the first test in the placement process, that of the teacher's referral, which warrants further study if we are to understand the nature of classification of LD youngsters and the characteristics of children who are served in special education programs.

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Table 1

Jackknifed Classification of Referred and Non-Referred Students

Group	Number of Cases		Percent Correct
	Non-Referred (Statistically Determined)	Referred (Statistically Determined)	
Non-Referred	153	31	83.2
Referred	8	20	71.4
TOTAL	161	51	81.6

Table 2

Jackknifed Classification of Referred, Not Placed and Referred, Placed Students

Group	Number of Cases		Percent Correct
	Referred, Not Placed (Statistically Determined)	Referred, Placed (Statistically Determined)	
Referred, Not Placed	4	6	40.0
Referred, Placed	6	12	66.7
TOTAL	10	18	57.1

Table 3

Classification of Referred, Not Placed and Referred, Placed Students

Group	Number of Cases		Percent Correct
	Referred, Not Placed (Statistically Determined)	Referred, Placed (Statistically Determined)	
Referred, Not Placed	9	1	90.0
Referred, Placed	1	17	94.4
TOTAL	10	18	92.9